BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268–0001

POSTAL RATE AND FEE CHANGES, 2000

Docket No. R2000–1

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS DAVIS TO INTERROGATORIES OF DOUGLAS F. CARLSON (DFC/USPS-T30-65-76)

The United States Postal Service hereby provides the responses of witness Davis to interrogatories DFC/USPS-T30-65 to 76, filed by Douglas F. Carlson on April 3, 2000.

Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

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April 17, 2000

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DFC/USPS-T30-65. Please refer to your response to DFC/USPS-T30-21(b).

a. Please explain how the data provided in response to DFC/USPS-T30-12(a) are used to calculate "the associated carrier waiting time resulting from this activity."

b. Please explain the meaning of Function 1.4, "Carrier Waiting for Review of Return Receipt," a cost item that appears in your cost study in USPS-LR-I-108.

c. USPS-LR-I-108 indicates that "Carrier Waiting for Review of Return Receipt" is based on data from a 1999 study. Please provide the raw data for "Carrier Waiting for Review of Return Receipt" and all instructions and descriptions of the methodology associated with this data-collection effort. (This information should have been provided in response to DFC/USPS-T30-12(a) and 21(b). If it was, please identify the location of this information and how this information was converted into a cost estimate.)

d. Please explain when and how data for Function 1.2, "Carrier/Driver Delivery & Call Window/Box Second Delivery," were collected.

RESPONSE:

a. Using the data provided in response to DFC/USPS-T30-12(a), I calculated a mean time by dividing total sampled labor time by total sampled volume. This mean serves as the unit time for both the clerk reviewing the return receipt, and the carrier waiting in the clearing review process.

b. Function 1.4, "Carrier Waiting for Review of Return Receipt," represents the time that the delivering employee waits while his or her return receipts are reviewed by the clearing employee.

c. I provided these raw data in response to DFC/USPS-T30-12(a). Please refer to my response to part (a) above for how I used these data to develop the unit time for carrier waiting in the clearing review process. USPS-LR-I-

108 at p. 48 (electronic file name: "return receipt.xls") shows how this unit time is then converted to a unit cost for the activity.

d. As explained in my responses to DFC/USPS-T30-12(a) and DFC/USPS-T30-21(b), these data were collected in 1976. Study data were obtained from surveys conducted at 26 post offices nationwide.

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DFC/USPS-T30-66. For each of the 24 facilities listed in the attachment to the response to DFC/USPS-T30-12(a), please provide the following information, in one chart or spreadsheet: CAG level, number of city carrier routes that the facility serves, number of rural carrier routes each facility serves, and post-office delivery statistics. Please use the definition of "post-office delivery statistics" that the Postal Service uses in the "Post Office Delivery Statistics" section of the *National Five-Digit ZIP Code and Post Office Directory (see, e.g.,* 1998 edition, Section 4).

RESPONSE:

Please see attachment.

ID#	CAG LEVEL	# OF CITY CR RTs	# OF RURAL CR RTs	# OF BOX DELIVERIES	# OF RURAL DELIVERIES	# OF CITY CARRIER DELIVERIES
1	K	0	1	170	201	0
2	G	0	0	536	0	0
3	E	22	0	1251	0	11,504
4	A	130	0	3458	0	51,808
5	A	15	0	0	0	1982
6	J	0	2	626	911	0
8	B	21	0	451	0	8,248
9	K	0	1	198	282	0
10	K	0	0	284	0	0
11	G	0	5	841	3,044	0
12	A	0	0	222	0	0
13	B	3	0	897	0	337
14	J	0	1	333	329	0
15	D	17	9	3020	4118	6914
16	J	0	0	159	0	0
17	A	28	0	434	0	6,860
18	G	2	3	1080	1396	1224
19	B	14	8	1044	5648	8319
20	A	55	0	1322	0	10,465
21	A	20	0	963	0	9,856
22	K	0	2	244	236	0
23	J	0	2	812	731	0
24	B	27	0	794	0	12,205
25	C	120	0	8179	0	46,068

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DFC/USPS-T30-67. Please refer to your response to DFC/USPS-T30-23.

a. Please explain the meaning and significance of a "low standard error."

b. Do your survey results have a low standard error? Please explain and provide all pertinent numbers, calculations, results, and conclusions pertaining to this issue.

c. Please identify the number of post offices you would need to survey in order to obtain statistically valid survey results. Please provide all pertinent numbers, calculations, results, and conclusions pertaining to this issue.

d. Please confirm that the need to "balance[] the ideals of obtaining abundant data from many facilities against the importance of completing this study within a limited time frame, the demands that this study would place on the field during a period of field budget cutbacks, and [your] own need to devote time to various projects and initiatives" explains why you cannot provide assurance that these survey results are statistically valid or reliable. If you do not confirm, please explain.

e. Please confirm that your survey would have produced results more statistically valid or reliable than the results you actually achieved if you had pursued the "ideal" of obtaining "abundant data from many facilities." If you do not confirm, please explain.

f. Please confirm that limited time caused you or the Postal Service to produce survey results that may not be statistically valid or reliable. If you do not confirm, please explain.

g. If the Postal Service had asked you to produce a statistically valid cost study and had given you the necessary time and resources, how many post offices would you have surveyed, and which steps that you did not take for this survey would you have taken in analyzing and using these data?

RESPONSE:

a. A low standard error indicates a low level of uncertainty around the sample mean. In other words, the lower the standard error the tighter becomes the range around the sample mean in which the true mean lies.

b. I did not calculate a standard error for my survey results, nor do I believe a meaningful standard error can be calculated for these results. Calculation

of a standard error requires a standard deviation for the data, which I do not believe can be developed given the manner in which data were reported. Specifically, facilities reported data in the aggregate for each day. For example, on a given day, a site reported a total of 196 return receipts reviewed in a total of 25 minutes. Given this aggregate reporting, one cannot meaningfully evaluate the dispersion of data for individual return receipts reviewed that day at that facility.

c. Given the lack of return receipt data (including return receipt volumes cleared) by facility within the universe of delivery offices, I cannot determine the number of post offices needed to survey in order to obtain statistically valid survey results.

d. Not confirmed. While I do not make assertions regarding the "statistical validity" of this study (please refer to my response to DFC/USPS-T30-69), I do believe that this study is both reliable and useful in determining return receipt clearing activity costs. In support of my claim, I would point out that this study was national in scope, sampled offices of various sizes and geographic locations, and observed a total of 8,918 return receipts over a full delivery week.

e. Not confirmed. While the results might have been more statistically valid, there is no guarantee that more observations would have produced materially different results, or that statistical validity would improve. For

example, more data from only one type of facility might not improve statistical validity.

f. Not confirmed. As explained in my response to DFC/USPS-T30-23, I took into account various constraints, including the demands on the field during a period of field budget cutbacks, in selecting a sample size.

g. Please refer to my response to part (c) above regarding sample size. As for other steps I would have taken in a theoretical condition of ample time and the absence of cost concerns, I would have considered introducing data collection controls or training of personnel to collect data.

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DFC/USPS-T30-68. Please refer to your response to DFC/USPS-T30-28. To the best of your recollection, please provide the number of courses you have taken in statistics, the titles of those courses, and the level (graduate or undergraduate) of each course.

RESPONSE:

I have completed the following two courses in statistics:

1. Quantitative Methods (Graduate Level)
2. Basic Statistics (Undergraduate Level)

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DFC/USPS-T30-69. Please refer to your response to DFC/USPS-T30-27.

a. Do you believe that calculation of the standard deviation of data is either an important or necessary step in evaluating the statistical reliability or validity of data or a study? Please explain.

b. Do you believe that calculating the 95-percent confidence interval for data is either an important or necessary step in evaluating the statistical reliability or validity of data or a study? Please explain.

c. Please provide any confidence intervals that you calculated in analyzing data on the cost of providing return-receipt service.

RESPONSE:

While I believe that calculations of standard deviations or confidence intervals are useful tools in evaluating the statistical reliability of a study, I do not believe that a study's usefulness necessarily hinges on the presence of such calculations. As stated in my response to DFC/USPS-T30-61, I did not calculate confidence intervals for this study. I do not believe that meaningful confidence intervals could have been developed because of the manner in which data were reported. Specifically, facilities reported data in the aggregate for each day. For example, on a given day, a site reported a total of 196 return receipts reviewed in a total of 25 minutes. Given this aggregate reporting, one cannot meaningfully evaluate the dispersion of data for return receipts reviewed that day at that facility. I also do not believe that an interest in computing confidence intervals would have justified the additional burden on the field of reporting data separately for each return receipt.

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DFC/USPS-T30-70. Please refer to your response to DFC/USPS-T30-32.

a. Please define "reasonable approximation."

b. Suppose the true number of return receipts processed at a facility was 537. Would 500 be a reasonable approximation of the true number?

c. Suppose the true number of return receipts processed at a facility was 537. Would 600 be a reasonable approximation of the true number?

d. Please provide all facts and information that confirm that the numbers of return receipts that facility 5 reported are, in fact, a reasonable approximation of the true number.

e. Please provide all facts and information that confirm that the numbers of return receipts that facility 5 reported are not inaccurate by a sum of 50 or more return receipts per day.

RESPONSE:

[a]. I define a reasonable approximation as a quantity that is close in value to but not necessarily the same as a precisely measured quantity.

[b-c]. Under your assumption, I believe that 500 would be a reasonable approximation, and that 600, while less close to the true count than is 500, would not be inherently unreasonable. I also do not believe that an approximation off by 63 out of 537 would skew my results significantly, especially if rounding up in some cases is offset by rounding down in other cases.

[d-e]. While I do not know the precise number of return receipts processed by facility 5, I do believe that this facility has made an effort to provide as close an estimate as possible given the large volume processed and the demands to move the mail as quickly as possible.

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DFC/USPS-T30-71. Would it be reasonable to conclude that your study provides a reasonable approximation of the time that clearing clerks spend reviewing return receipts, rather than a statistically valid study or survey? If not, please explain why not.

RESPONSE:

It would be reasonable to conclude that my study incorporates certain data which represent reasonable approximations. I would not, however, dismiss the reliability of this study, which was national in scope, sampled offices of various sizes and geographic locations, and observed a total of 8,918 return receipts over a full delivery week.

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DFC/USPS-T30-72. For an office that completed one return receipt and whose actual time was less than 30 seconds, do you believe that this office would have rounded down to zero minutes? If yes, please explain the basis for your contention.

RESPONSE:

That depends. I believe that it is more likely that an office that spent 5 seconds reviewing one return receipt would round down than would an office that spent 29 seconds reviewing one return receipt.

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DFC/USPS-T30-73. Please refer to your response to DFC/USPS-T30-38.

a. Where in your instructions did you authorize post offices to report reasonable approximations, rather than actual data?

b. How do you know that facility 25 did not measure the time spent processing 10 return receipts, calculate 30 seconds per return receipt based on this sample, and use 30 seconds per return receipt as the time per return receipt for all return receipts reported during the survey week?

c. How do you know that facility 25, in estimating 30 seconds per return receipt, sampled a statistically significant number of return receipts before dividing the number of return receipts by the number of minutes to arrive at 30 seconds per return receipt?

d. How do you know that facility 25 performed any mathematical calculations whatsoever of the form quantity divided by time in estimating that the average time per return receipt was 30 seconds?

RESPONSE:

While my instructions did not explicitly authorize post offices to report reasonable approximations rather than precise measurements, I believe that reasonable approximations are useful data that should be included in this study. While I do not know exactly how facility 25 arrived at an approximation of 30 seconds per return receipt, I note that this unit time is consistent with unit times reported by several other facilities that precisely measured both volumes and times.

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DFC/USPS-T30-74. Please confirm that the "norm" to which you refer in, e.g., DFC/USPS-T30-30, is, itself, based on reasonable approximations, not statistically valid calculations. If you do not confirm, please explain.

RESPONSE:

Not confirmed. I would say that the norm to which I referred is based on a combination of precisely measured data and data that were likely reasonable approximations.

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DFC/USPS-T30-75. All else equal, please confirm that, generally, the wider the variation in data results (e.g., number of return receipts, number of minutes), the larger the sample size must be to ensure statistically valid and reliable results. (For purposes of this interrogatory and by way of example, a variation from 5 to 30 seconds is greater than a variation from 5 to 10 seconds.) If you do not confirm, please explain.

RESPONSE:

Confirmed.

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DFC/USPS-T30-76. Please refer to your response to DFC/USPS-T30-43. Was your sample size sufficiently large to generate statistically valid or reliable survey results that can be used to estimate labor costs for return receipt? Please explain and provide any calculations supporting an affirmative response.

RESPONSE:

As stated in my response to DFC/USPS-T30-43, I believe that my sample size, which resulted in 8,918 return receipt observations, was sufficiently large to provide reliable and representative data to estimate the labor costs associated with the clearing activity. I do not know if the sample was large enough to generate statistically valid or statistically reliable data. See my response to DFC/USPS-T30-67[c].

DECLARATION

I, Scott J. Davis, declare under penalty of perjury that the foregoing answers are true and correct, to the best of my knowledge, information, and belief.

Scott J. Davis

Dated: April 17, 2000

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.

David H. Rubin

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April 17, 2000